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A Pinch of Prevention is Worth a Pound of Cure: Proactive Dentistry in the Wake of COVID-19

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We live in an increasingly globalized and transnational world. With modern advances in travel, humans move around today more than in any previous generation. Although this has tremendous benefits in cultural and societal advancements, it also creates great liability in epidemiology because modern outbreaks have no borders and cross all levels of society, regardless of race, ethnicity, and socioeconomic status. The coronavirus pandemic (COVID-19) has ushered in unprecedented times. Because the average infected person will spread the disease to 2 or 3 others, its spread has been exponential. A large number of health care workers who died in China in the early days of this disease were ear, nose, and throat physicians and ophthalmologists. This was possibly due to the high viral shed from the nasal cavity. In Wuhan, 14 people became infected after performance of an endoscopic pituitary surgery on a single COVID-19 patient. SARS-CoV-2 has been demonstrated to remain aerosolized for 3 hours after contamination and on plastics and stainless steel for up to 72 hours. This makes the dental community a relatively high-risk population.

Pandemics inflict devastating consequences on communities and cause long-term rippling effects in the economy and the health care system. Acute immunodeficiency syndrome (AIDS) was first described as “gay-related immunodeficiency syndrome” in 1981. Young gay men had begun falling ill and dying of opportunistic infection, and fear of the “gay plague” spread rapidly, along with the social stigma. Two years later, the Centers for Disease Control and Prevention (CDC) documented heterosexual transmission of

AIDS.¹ What was originally referred to as a “gay virus” had transformed into one of the greatest ongoing pandemics and scientific challenges of modern medicine. The AIDS pandemic resulted in acceptance of “universal precautions” that revolutionized the standard of care throughout medicine. Before the human immunodeficiency virus (HIV) and AIDS, dentists did not commonly wear masks or eye protection. In the late 1980s and early 1990s, in an attempt to protect health care workers, the Occupational Safety and Health Administration (OSHA) and the CDC proposed guidelines to reduce exposure to bloodborne pathogens such as HIV and hepatitis B. Dentistry resisted this change at every step. Dentists argued that “children would be frightened of the masks.” The American Dental Association ADA led a fight against OSHA’s universal precautions rule, arguing that no dentists had contracted these pathogens. In an op-ed piece published in the *New York Times* on November 12, 1989, Dr Avrum Goldstein, a periodontist from New Haven, CT, expressed his opposition this way: “...these regulations will bring about changes in the dentist-patient relationship and make it more difficult to practice dentistry. By its nature, dentistry is an intimate occupation. The dentist works within an inch of a patient’s head, probing sensitive, often tender areas of the patient’s body. The mouth embodies our ability to smile, kiss, talk, and eat—all very emotional qualities. Patients’ need a warm and trusting relationship with their dentist to help overcome fears and make necessary dentistry possible. It will be more difficult to establish this relationship when the dentist is gowned,

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shielded, and masked. [These barriers] will have a profound effect on the relationship between the dentist and patient." In 1991, the ADA challenged the rule in the US Court of Appeals for the Seventh Circuit and lost. In 2020, the ADA's resistance to masks and eye protection seems preposterous, especially given the information we have about bloodborne pathogens today.

As a species, we are reluctant to change. This is evident, not only by dentistry's resistance to adopt universal precautions, but also throughout history. The technology needed to eradicate smallpox was first described in 1798, but took nearly 180 years to execute. The present strand of coronavirus might be new, but we have seen the same societal reaction to outbreaks countless times. With fear and panic brings blame and bigotry. On March 19, 2020, the President of the United States referred to the coronavirus as the "Chinese virus." Global threats require unified efforts, which is why terms such as the "Chinese virus" are so detrimental. "Anti-Chinese hostility has been a recurrent problem, whether with plague in San Francisco in 1900, SARS in 2003, or Covid-19 today."² AIDS was not contained in the 1980s because it was considered a gay disease. Syphilis was not eradicated with the invention of penicillin because it was said to limit promiscuity. If we have learned anything from history, it is that we must come together as a species to fight as one or perish as individuals.

After the SARS outbreak in 2002 and 2003, the United Nations adopted the International Health Regulations in an effort to prevent and contain future outbreaks. Few countries have met their commitments. This is likely due to the costs associated with adopting these advances, in addition to society's opposition to change. The cost of an economic bailout will far exceed the cost to prevent a global outbreak. The world needs a coordinated effort by a global institution with enough authority and funding to be efficient.³ This is of particular interest to doctors because epidemics too often claim the lives of health care providers.

On March 16, 2020, the ADA stated, it "is deeply concerned for the health and well-being of the public and the dental team. In order for dentistry to do its part to mitigate the spread of COVID-19, the ADA recommends dentists nationwide postpone elective procedures for the next three weeks. Concentrating on emergency dental care will allow us to care for our emergency patients and alleviate the burden that dental emergencies would place on hospital emergency departments." Are

dental offices prepared to treat these potentially infected patients? If a patient is suspected of having COVID-19 and emergency dental care is indicated, it has been recommended that the dental treatment be performed in a negative pressure room or airborne infection isolation room.⁴

What will come of this pandemic? The AIDS pandemic resulted in masks, gowns, and eye protection. Samaranayake and Peiris⁵ reported a retrospective review in 2004 after the peak of the SARS outbreak. Their review found that the SARS outbreak had a large effect on providers, with some countries reporting that 25 to 33% of those infected were health care workers.⁵ The study recommended preprocedural rinsing whenever possible to reduce the number of antimicrobial releases into the environment. The usage of rubber dams can also reduce microbial aerosolization by up to 70%. Hand hygiene is still the single-most effective method of reducing transmission. After the SARS outbreak, N95 masks came into use throughout Hong Kong for routine dentistry.

Protecting health care workers and patients is of utmost importance, and we must focus on preventing future outbreaks. As a profession, we should explore methods of reducing transmission of all infectious agents. External mouth suctions, which work like the scavenger systems in our nitrous oxide devices, are being tested for effectiveness in Korea. Commercial air purifiers and air exchange devices are also being explored for the dental setting. Creating negative pressure operatories might seem a drastic and expensive approach now. However, in 40 years, dentists might think we were ludicrous for working without them, just as we judge those before us who did not use gloves. This pandemic will affect the delivery of care; the only questions are when and how. Will dentistry accept the advances or continue our history of fighting change?

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